

reasonable interpretation consistent with the specification. MPEP § 2111. As basis for the § 112 rejections, the Examiner has renumbered the order of the illustrated circulators in a manner opposite from that described in the specification. Applicants submit that such a reinterpretation of the claims and figures is improper.

As described in the specification, the figures show a first circulator 8, a second circulator 11, and a third circulator 15. Each circulator has three inputs. The first input of the first circulator 8 receives the pump signal from the first pump 7, the first input of the second circulator 11 receives the pump signal from the second pump 10, and the first input of the third circulator 15 receives the pump signal from the third pump 14. As described in the specification, the inputs of each circulator are numbered in a clockwise manner. Accordingly, referring to "a second circulator with ... a third input connected to a second input of the first circulator," the appropriate connection to be looking at is illustrated as a line between first circulator 8 and second circulator 11. Likewise, there is an amplifier fiber 21 having an end connected to a second input of the second circulator 11 (leftmost connection of second circulator 11, the amplifier fiber 21 being connected in figures via optional third circulator 15). As the language of the claims is entirely consistent with the description in the specification and illustration in the figures, Applicants respectfully submit that the claims are definite in their present form. Reconsideration and withdrawal of the § 112, second paragraph, rejection are requested.

**Prior Art Rejections**

The rejections of record have been withdrawn. No prior art rejections are provided for claims 2 and 3. Claims 1, 5-7, 10, and 13-14 are rejected under 35 U.S.C. § 103(a) as being

unpatentable over U.S. Patent 6,449,072 to Sian *et al.* ("Sian"). Claim 8 is rejected based on Sian in view of U.S. Patent 5,812,712 to Pan. Claim 9 is rejected based on Sian in view of U.S. Patent 6,320,884 to Kerfoot. Claim 15 is rejected based on Sian in view of U.S. Patent 6,288,810 to Grasso.

Sian discloses an add-drop multiplexer adapted for use in branching units of networks to allow signals passing along a main trunk between terminal stations to be dropped to, and added from, a spur station. The Examiner cites Fig. 2 as disclosing the claimed invention.

At a first trunk input 1, a plurality of wavelengths are input into the multiplexer, including  $\lambda_1$ .

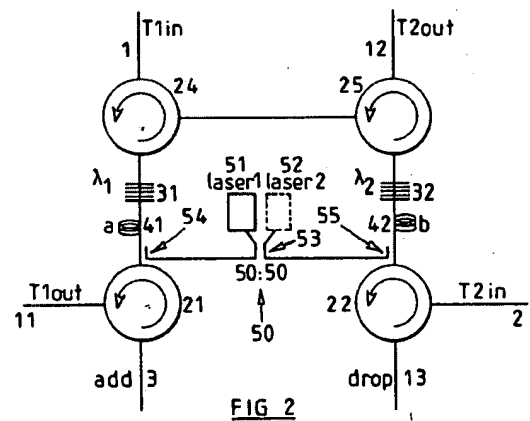
For this first trunk, it is  $\lambda_1$  which will be add-dropped.

Specifically,  $\lambda_1$  input at first trunk input 1 passes through circulator 24 to be reflected by Bragg grating 31, and is then passed to circulator 25, and then

circulator 22, to be output at branch output 13. Other wavelengths input via first trunk input 1 pass through the Bragg grating 31 to circulator 21, to be

output at first trunk output 21. A new  $\lambda_1$  signal is added to the first trunk output 21 via branch input 3, reflected off Bragg grating 31, to be output at first trunk output 21, together with the other wavelengths.

Similarly, for a second trunk input 2 and second trunk output 12,  $\lambda_2$  is add-dropped via branch input 3 and branch output 13, using Bragg grating 32 as a reflector for  $\lambda_2$ .



Pumping laser 51, and optional pumping laser 52, pump fiber amplifiers 41 and 42 to provide bi-directional amplification of traffic signals passing in either direction.

Referring to claim 1 of the present application, the Examiner cites Sian's circulator 24 as *the first circulator*, Sian's circulator 25 as *the second circulator*, Sian's second trunk output port 12 as *the output*, Sian's laser 51/coupler 54 as *the first pumping signal source*, Sian's laser 52/coupler 55 as *the second pumping signal source*.

Referring to Fig. 2, on circulator 24, the Examiner cites the bottom connection as the first input, the top connection as the second, and the right-side connection as the third input. For circulator 25, the Examiner cites the bottom connection as the first input, the top connection as the second input, and the left-side connection as the third input.

The Examiner states:

*Sian differs from the claimed invention in that Sian does not specifically disclose the reflecting means reflects the first pumping signal from the first pumping signal source. Sian discloses fiber Bragg gratings 31 and 32 for reflecting wavelength of  $\lambda_1$  and  $\lambda_2$ . It would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate a specific Bragg grating, for grating 32 to reflect the transmitted signal that are entered and reached the second circulator 25, to further drop the transmitted signal at a specific port.*

Sian neither teaches nor suggests each limitation of the claims. For example:

- Referring to claim 1, the "output" is an output via which a transmission signal that is amplified by the amplifier exits the system. This transmission signal is also received at the second input of the first circulator, supplied from the third input of the first

circulator, received at the second input of the second circulator, and supplied from a third input of the second circulator (connected to the second input of the first circulator). No such amplified transmission signal path is provided in Sian. The only amplified signal disclosed as passing through circulator 24 in Sian that is output at second trunk output 12 is the added  $\lambda_2$  from branch input 3, which is received at the same input of circulator 24 as the first pumping signal (*i.e.* received at the first input, not the second input).

- The Examiner asserts that it would have been obvious to incorporate a specific Bragg grating 32 to reflect the transmitted signal that are entered and reached the circulator 25, to further drop the transmitted signal at a specific port. This assertion misses the point of Sian, since Bragg grating 32 *already performs the function* that the Examiner suggests. Specifically, added  $\lambda_2$  from branch input 3 is received at the circulator 25 from the circulator 24, then supplied from the circulator 25 to the Bragg grating 32, thereby reflected back to the circulator 25 to be output at the second trunk output 12. While it might be obvious to add additional Bragg gratings to add and drop additional wavelengths, there is no suggestion to modify Sian to drop wavelengths to arbitrary ports, since the purpose of Sian is to provide a branching unit add drop multiplexer (*i.e.*, the branching unit having an add port and a drop port, and the multiplexer being provided with plural trunk I/O ports). Modifying Sian in such a manner is suggestive of an attempt at hindsight reconstruction. Moreover, even if Sian were modified in such a way, it still would not suggest each requirement of claim 1.

- Claim 1 recites a second circulator with a first input connected to the second signal source via reflector means for reflecting the first pumping signal from the first pumping signal source. While circulator 25 is connected to laser 52/coupler 55 via a Bragg reflector 32, the reflector is not for reflecting the first pump signal from the first pumping signal source (*i.e.*, laser 51/coupler 54). Rather, Bragg grating 32 reflects  $\lambda_2$ , adding and dropping  $\lambda_2$  to/from the second trunk. There is no suggestion of modifying Bragg grating 32 to reflect the wavelength emitted from laser 51.
- The Examiner cites the port of circulator 25 supplying the second trunk output 12 as being the second input of the second circulator. Claim 1 requires that the second input supplies the first and second pumping signals. While the signals from laser 52/coupler 55 might be supplied at the second trunk output 12, there is nothing to suggest that signals from laser 51/coupler 54 are likewise supplied. Additionally, claim 1 requires that the second input receives the transmission signal. While the cited port of circulator 25 supplies signals to the second trunk output 12, no signals are received (the port is taught only as an output port).
- Claim 1 recites a third input connected to a second input of the first circulator, receiving the first pumping signal from the first circulator and supplying the transmission signal to the first circulator. The Examiner cites “the input port of circulator 24 that is connected to the input line T1in” as the second input of the first circulator. The Examiner further cites “the input T1 in Fig. 2” as third input of the second circulator. The “third input” of circulator 25, connected to the “second input”

of circulator 24, does not supply any transmission signals to the circulator 24. Rather, referring to the connection between circulators 24 and 25, the only “transmission signal” passed are supplied by circulator 24, not circulator 25 (*i.e.*, old  $\lambda_1$  directed from T1in 1 to drop 13; and new  $\lambda_2$  directed from add 3 to T2out 12).

- Contrary to the Examiner’s statement (item 5, line 5 of Office Action) that Sian discloses “pumping signals from multiple pumping sources *at different wavelengths* (51, 52, fig. 2),” the pumping sources 51 and 52 in Sian have, and must have, the same wavelength. This is necessary because the purpose of having two pumping sources in Sian is to provide redundancy (*cf.* Sian column 6, lines 10-15).

As Sian neither teaches nor suggest each limitation of claim 1, nor the inventive concept of the present invention, and since there is no suggestion of desirability for modifying Sian to meet each requirement of claim 1, Applicants respectfully request reconsideration and withdrawal of the rejections. Moreover, the other applied references, either individually or in combination with Sian, also fail to teach or suggest each limitation of claim 1. As all claims depend from claim 1, Applicants submit that the dependent claims are likewise patentable.

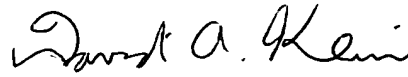
In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

RESPONSE UNDER 37 C.F.R. § 1.116  
Appln. No.: 09/597,081

Attorney Docket No.: Q59763

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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